

# Sunrise Review of Soil Scientists

Report to:  
House Committee on Commerce and Labor



December 2005

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## **THE SUNRISE REVIEW**

The Sunrise review process of the Soil Scientist profession was initiated by a written request from the chair of the House Commerce and Labor Committee to the director of the Department of Licensing. A thorough analysis of the issues was carried out according to the guidelines and criteria set forth in RCW.18.118.

The Department of Licensing's Management Analyst Unit conducted the Sunrise Review between October and December 2005. Staff sought out issues that would indicate the need for regulation by surveying state consumer protection divisions, the Better Business Bureau, other state regulatory agencies, societies who certify or write about the industry, and professionals in the industry. In addition we sought out and/or received input from professionals in the industry, and government who interact with soil scientists.

The purpose of this Sunrise Review is to determine if regulating the practice of Soil Scientists would protect the public's health, safety and welfare. The practice of Soil Scientist spans a wide range of interests and occupations and attitudes about regulation vary.

Historically, regulation of professionals has occurred because of a perceived need. In theory, regulation protects the public from unqualified, incompetent, unethical individuals and gives victims an avenue to pursue restitution.

### **RCW 18.118**

It is the intent of this chapter that no regulation shall be imposed upon any business profession except for the exclusive purpose of protecting the public interest. All bills introduced in the legislature to regulate a business profession for the first time should be reviewed according to the following criteria. A business profession should be regulated by the state only when:

- a) Unregulated practice can clearly harm or endanger the health, safety, or welfare of the public, and the potential for the harm is easily recognizable and not remote or dependent upon tenuous argument;
- b) The public needs and can reasonably be expected to benefit from an assurance of initial and continuing professional ability; and
- c) The public cannot be effectively protected by other means in a more cost-beneficial manner.

### **RCW 18.118.005**

The Department of Licensing, Policy and Research is responsible for conducting impartial analytical reviews of proposals for regulations of profession not currently regulated.

## EXECUTIVE SUMMARY

Considerable evidence compiled in this report, through out-of-court settlements and ongoing litigation, show harm to property, health, safety and welfare of the public. Public health is endangered by improper soil analysis that has led to contaminated wells and groundwater; septic system failures; and compromised wetlands. Harm to the public exists when design work is approved without a comprehensive soil analysis conducted by a soil expert to support the decision taken.

Public harm occurs when ordinances excludes a professional group that hold an expertise through education and experience. Exclusion of a qualified group to practice diminishes public choice. A significant number of court settlements indicate that there are professionals who practice soil science beyond the scope of their expertise.

In view of the findings regarding the practice of soil science, the following recommendations are made for consideration by the Legislature:

- 1) That Soil Scientists be regulated; and
- 2) expertise should be defined to minimize overlap of work to be performed.

## BACKGROUND

The U.S. Department of Labor, Bureau of Labor Statistics, classifies the soil scientist profession within the profession of Agricultural and Food Scientist. According to the Bureau of Labor Statistics, "Soil scientists study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. They also study the responses of various soil types to fertilizers, tillage practices, and crop rotation.

Many soil scientists who work for the Federal Government conduct soil surveys, classifying and mapping soils. They provide information and recommendations to farmers and other landowners regarding the best use of land, plant growth, and methods to avoid or correct problems such as erosion. They may also consult with engineers and other technical personnel working on construction projects about the effects of, and solutions to, soil problems. Because soil science is closely related to environmental science, persons trained in soil science also apply their knowledge to ensure environmental quality and effective land use." [The Bureau of Labor Statistics](#) states on their Internet site that "Agricultural and Food Scientists held about 18,000 jobs in 2002".

The [Washington State Department of Employment Security, Workforce Explorer](#), and the [U.S. Department of Labor Statistics](#) Internet sites also provide a classification of "Soil and Plant Scientist." According to Workforce Explorer, Soil and Plant Scientists conduct research in breeding, physiology, production, yield, and management of crops and agricultural plants, their growth in soils, and control of pests; or study the chemical, physical, biological, and mineralogical composition of soils as they relate to plant or crop growth. May classify and map soils and investigate effects of alternative practices on soil and crop productivity."

The U.S. Department of Labor Statistics estimate there are 10,260 plant and Soil Scientists nationwide. Statistics on the number of [Plant and Soil Scientist in Washington](#) State are not available on the Employment Security's Workforce Explorer website for the number of Plant and Soil Scientist in Washington State. The Workforce Explorer, occupational detail, however, does define [Agricultural and Food Scientist](#) as a broad category that includes: Animal Scientists, Food Scientists and Technologists, and Soil and Plant Scientists. The Workforce Explorer site states that there were 466, "Agricultural and Food Scientist" employed during the second quarter of 2004.

[Workforce Explorer](#) also defines training programs for "Soil Science and Agronomy, General" as one that " focuses on the scientific classification of soils, soil properties, and their relationship to agricultural crops. Includes instruction in soil chemistry, soil physics, soil biology, soil fertility, morphogenesis, mineralogy, hydrology, agronomy, and soil conservation and management."

The following are eleven areas of soil science identified on the [Soil Scientists of America Internet site](#): Soil Physics; Soil Chemistry; Soil biology and Biochemistry; Soil Fertility and Plant Nutrition; Pedology; Soil and Water Management and Conservation; Forest and Range Soil; Nutrient Management and Soil and Plant Analysis; Soil Mineralogy; Wetland Soils, Soils and Environmental Quality.

As shown above, clearly defining soil scientist as a specific profession is difficult. In addition to not having a clearly defined occupational category for soil scientists, it is not always clear who provides which type of service as it relates to our Earth's surface.

The online [Wikipedia](#) encyclopedia points out that pedology and edaphology are used as if synonymous with soil science; and that the diversity of names associated with this discipline is related to the various associations concerned. According to Wikipedia, "Because an understanding of soil science is important to the correct practice of a variety of disciplines. Soil specialists within related disciplines sometimes choose to refer to themselves as soil scientists, leading to some confusion as to the qualifications."

According to the [Soil Scientists Society of America](#), during the last couple of decades, there has been a shift in the focus of chemical processes in soil from one that influences plant growth and nutrition, to more of an emphasis on the environmental aspects of soil chemical processes. The study of natural soil profiles has expanded to now include human impacted sites. "Fundamental pedological concepts include soil forming processes, profile nomenclature, types of parent materials, landscapes and ecosystems as well as an ability to use and interpret taxonomic terms and soil surveys. Professional level understanding requires synthesis of these fundamentals into successful site interpretations as applicable for septic tanks, wetlands, etc."

To add to this complexity is the diverse landscape in the state of Washington. In Eastern Washington a soil scientist is more likely to focus on soil science as it relates to agriculture where the focus in Western Washington will concentrate more on forestry and wetlands. In both Eastern and Western Washington there continues to be an emphasis in regards to the land-based treatment of wastes.

**The Department of Ecology (DOE)**—Guidelines for Preparation of Engineering Reports For Industrial Wastewater Land Applications System (May 1993 Publication #93-36), Soil Scientist defined as follows:

“Soil Scientist means an individual who is a registered as Certified or Registered Professional Soil Scientist or as Certified Professional Soil Specialist by American Registry of Certified Professionals in Agronomy, Crops, and Soils or by National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, master’s or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5, 3, or 1 years, respectively, of professional experience working in the area of agronomy, crops or soils.”

As recognized by the Department of Ecology, ensuring that a soil science holds the correct credentials is essential because of the complexities and importance of soil science to: the identification and protection of environmentally critical areas; and land management for productivity, water quality, restoration and sustainability.

## **EDUCATION**

Soil science programs are available at Washington State major universities. Washington State University programs provide more of a focus in the area of Agriculture and the University of Washington’s focus is in the field of forestry.

Spokane Community College	Soil Science and Agronomy	Associates Degree
Washington State University	Soil Science	Bachelor of Science, minor
Washington State University	Agricultural Science, General	Bachelors of Science, major
Washington State University	Agricultural Science, General	Master’s Degree
University of Washington	Environmental Science and Resource	Bachelors Degree, major
University of Washington	Soil Science	Bachelors Degree, minor
University of Washington	Soil Science	Masters Degree, Ph. D

According to a Crop Scientists Association Newsletter, during the 2004-2005 academic year there were 211 graduates in Washington and surrounding states who obtained a masters degree in soil science; and 87 who obtained a Ph.D. (There was no information available on the number of undergraduates.

## **SOIL SCIENTIST ASSOCIATIONS**

Professional associations and societies can play an important role in providing a method of ensuring an individual has the appropriate qualifications, experience and ethical fortitude needed to deliver the services needed by the profession. Below are the professional associations, consortiums, and societies involved in the Soil Scientist profession).

**USC SSA** - United States Consortium of Soil Science Associations—A consortium established to promote national communication and coordination between soils societies and associations. The goals of the USC SSA are to promote soil and other similar science associations on common soil issues; and to provide outreach to the public and elected decision makers.

- There are currently 48 individual state soil societies and associations, including the Washington Society of Professional Soil Scientists (WSPSS).

**NSCSS** - National Society of Consulting Soil Scientists—Their mission is “to advance the discipline and practice of soil science by professionals, promote quality interaction between professional soil scientists and their communities, represent the diverse consulting, service and business interests of professional soil scientists, facilitate the exchange of business and soil science experiences within the Society, and foster professional and ethical conduct in the soil science discipline.”

The National Society of Consulting Soil Scientists website’s membership directory provides a list of 12 members in the northwest region (Washington, Oregon, Idaho, Wyoming, Alaska) who include pedologists, edaphologists, soil classifiers, soil surveyors, environmental site assessors, erosion and sediment control specialists, wetland delineators, on-site septic system site assessors, risk assessors, water quality protection specialists. The different levels of membership in the NSCSS include the following:

- Regular member—A soil scientist with at least a Bachelor’s degree from an accredited college or university in agricultural, biological or physical and earth sciences with an emphasis in soil science.
- Student Member—A student who is enrolled in a college or university.
- Affiliate Member—An individual who does not qualify for regular member or student member status but wish to support the goals of the NSCSS.

The society has a code of ethics and a disciplinary clause for unethical conduct.

**SSSA – Soil Science Society of America**—An international educational society who shares a close working relationship with the American Society of Agronomy (ASA), and the Crop Science Society of America (CSSA). Society members are dedicated to the conservation and wise use of natural resources to produce food, feed, and fiber crops while maintaining and improving the environment. SSSA continues to modify its educational offerings to support the changing needs of its members. The following is the SSSA mission statement:

1. To enhance the sustainability of soils, the environment, and society by integrating diverse scientific disciplines and principles in soil science for the wise stewardship of soil and natural resources, and
2. To advance the discovery, practice, and profession of soil science through excellence in the acquisition and application of knowledge to address challenges facing society, in the training and professional development of soil scientists, and in the education of, and communication to a diverse citizenry.

Nationwide membership is 5,832 including Certified Professional Soil Scientists (CPSS) and Certified Professional Soil Classifiers (CPSC).

A certified professional is an individual who has met the following education and experience requirements, and has passed the fundamentals of soil science and professional practice examinations:

- Bachelor of Science degree with a major in soil science and five years experience;
- Masters of Science or a Ph.D. and three years experience.

There are approximately 1,046 certified professional soil scientists, and approximately 196 certified professional soil classifiers nationwide.

A certified professional must also sign and agree to uphold the [ARCPACS Code of Ethics](#), and is required to earn 40 hours of continuing education units (CEU) every two-years.

*Note:* The public can find out whether a soil scientist is a certified professional with the SSSA by going to their website, selecting the cert/exam button, and filling out the box titled, *Certified Professional Soil Scientist (CPSS)*. However, the public must first know the SSSA exists to be able to find the website and the public is not able to find a Soil Scientist by accessing the yellow pages of their phone book.

**ARCPACS – American Registry of Certified Professionals in Agronomy, Crops and Soils**—is a membership service of the American Society of Agronomy that provides professional identity to those individuals who have met the certifying standards.

- Defines a Code of Ethics that certified Professional Soil Scientists are required to uphold.

#### *ARCPACS Complaint Investigation Procedures*

Anyone can file a written complaint for ethics violations with the American Society of Agronomy (ASA). The association delegated the responsibility of receiving complaints. Complaints are forwarded to the ARCPACS Board Standards and Ethics Committee (SEC) who determines whether the complaint warrants investigation.

The SEC is a volunteer board made up of people from all over the United States. They come together as a group (usually by teleconference) only when there is a complaint. At the conclusion of the complaint investigation process the SEC will take one of the following actions: exonerate the defendant, write a letter of warning, suspend the defendant, revoke certification, or extend the investigation.

According to the Executive Director of Certification Programs, they have received no complaints in the last five years. However, they wonder whether the general public knows about the process for reporting alleged misconduct, or that there truly are very few problems.



**SWS – Society of Wetland Scientists** –is an organization whose purpose is to promote and exchange information relating to wetland science. They have over 4000 members from the U.S., Canada, Mexico and many other countries.

The Society of Wetland Scientists Professional Certification Program is intended to meet the needs of professional ecologists, hydrologists, soil scientists, educators, agency professionals, consultants, and others who practice wetland science.

*Wetland Professional In Training (WPIT)*—a person who has met the education requirements but does not meet the experience requirements. Educational requirements include the following:

- Bachelor of Science, Bachelors of Arts or equivalent higher degree with fifteen semester credits in biological sciences; fifteen semester credits in physical science; six semester hours of quantitative sciences.

*Professional Wetland Scientist (PWS)*—a person who has met the education identified plus fifteen semester hours or equivalent of wetland-related coursework; and five years of full-time professional experience (which must be gained within the ten years prior to applying).

## WASHINGTON STATE ASSOCIATIONS

**WSPSS** – Washington Society of Professional Soil Scientist—is “an organization that supports and promotes the study of and wise use of soil and associated natural resources.” The goals of WSPSS include the following:

- Promote Professionalism and ethical standards among Washington soil scientists;
- Educate and Inform others on how to wisely use soil and other natural resources;
- Provide an information and communication link between and among Washington soil scientists and other scientists;
- Subscribe to the American Registry of Certified Professionals in Agronomy, Crops, and Soils ([ARCPACS](#)) code of ethics.

There are currently 70 members of WSPSS

**AWSS** - Association of Women Soil Scientists—is open to both women and men who are interested and support the [goals of AWSS](#). There is a membership directory on their website, however, it is only available to members of the association.

## Soil Scientist Survey Responses

### Washington Society of Professional Soil Scientist Survey

Washington Society of Professional Soil Scientists conducted a survey, relating in part to licensure, compiled in November 2005. The survey was sent to 65 members. Response to the survey was 21, or about 32%. Not all recipients of the survey responded to all questions. Excerpts from this survey are provided below:

*Can customers easily evaluate the qualifications of a person, calling themselves, a Soil Scientist?*

- No
- Probably only by reputation
- Difficult to evaluate if a person is qualified and does not require certification to advertise services.
- Most people unaware of Soil Science Society of America (SSSA) certification or who meets the standards.
- ARCPACS, now SSSA, certification should help this.
- Do not think the average customer could necessarily evaluate the skills of a soil scientist since relatively unfamiliar with soils in general.
- Most people do not know what a soil scientist does, how they were trained, just that they need one.

*How do you see state licensing helping customers better evaluate the qualifications of a soil scientist?*

- It would be easy for the customer to request that information or to see the certificate of licensing.
- It is a level of assurance in the integrity of the work.
- It would provide a list of qualified soil scientists.
- More options in looking for the person that best fit the need.
- The licensure would have to be backed up by entrance exams and maintenance of knowledge over time.
- Provides assurance from a local jurisdiction that the person is qualified, and there is protection or at least recourse if there is malpractice or bad work.

- It would provide a list of qualified soil scientists and would provide documentation of what that person had to do in order to become licensed.
- It could put the state's stamp of approval I guess.
- Professional license gives us more credibility for our discipline and assures the customers that we have years of field experience to back up our skills.
- Gets rid of pseudo soil scientists.

*How effective is the existing complaint procedure at protecting WA state consumers from soil scientist malpractice? (The existing procedure is through the SSSA Ethics Committee, but only applies to soil scientists certified through that group.)*

- Don't know
- Not sure
- Never heard of any complaints
- Totally ineffective
- Not adequate as the state does not recognize soil scientists as a practicing profession.
- There is none.
- The existing procedure is through the SSSA Ethics Committee but only applies to soil scientists certified through that group. Most citizens and even many soil scientists are unaware that there is a complaint procedure available through the SSSA.
- Two complaints were made to the committee from this state where the complaint was not satisfied with the process. The complaint process description on the SSSA Website is difficult to find.
- Very poor. There is an inability to levy consequences, monetary or professional, upon unqualified people outside the court of law that is often consuming and expensive.

*How will state licensing ensure that a soil scientist is competent?*

- It will require proof of education and experience. It will also require substantial amounts of money to get and maintain licensing, so fly by night frauds will be discouraged.
- Licensing board sets qualifications. If they are not met, or if they are failed, the soil scientist loses license and ability to practice.
- It would help full time practitioners but may be a deterrent to those who work part time.

- There will need to be a credible examination procedure to become licensed and CEU to maintain proficiency.
- ARCPACS should do that
- Right now we practice illegally as SB5065 sunset our right to work.
- It won't.
- Utilizing existing certification procedures from national exams. National certification follows strict guidelines and standards comparable to engineer and geologist certifications.
- It will require the standards, proof of education and experience. It also provides a process for when practice is substandard or unethical.
- Through certification.
- Will have to pass a set of standards testing their knowledge as well as upholding to ethical & professional standards set forth by the state.
- By requiring professional work experience in the field and by licensure testing.

*Can you provide specific examples of where the health, safety or welfare of the public has been harmed or endangered as a result of unqualified professionals in our discipline?*

- Wetlands, septic systems
- No, but how about professionally unethical behavior.
- I can only guess but in regard to soils analyses for septic systems, if the soils are wrongly categorized and the wrong design recommended, this can result in failure of the drain field and a health hazard to the homeowner. On a grander scale, if a few of us were geo-techs (which usually they want a civil engineer) the incorrect characterization of soils for large building foundations can be disastrous.
- Any time a determination of soil behavior and characteristics is made by a minimum set of skills and knowledge needed to perform quality work.
- I have provided that in other documents to the State Department of Licensing.
- Not for soil but for geology. I am frustrated because Department of Energy does not require its contractors to certify their work at Hanford. A potential issue here.
- Can't think of any.

*Do you believe licensing will help prevent endangerment to the health, safety or welfare of the public, and if so, how?*

- No
- Probably not
- Yes, when we question field interpretations and modeling, we have no way to officially check on integrity of results and method.
- Yes, requires that soil related questions be dealt with by soil scientists.
- Possibly the welfare of the public. Quality calls can save the public money by reducing erosion costs, and helping people from making bad decisions for building site locations.
- Possibly
- Yes, by offering response to poor work and establishing a minimum set of skills and knowledge needed to perform quality work.
- Yes, the threat of license revoking due to malpractice will encourage soils scientists to do competent and professional work at all times.
- Yes, by insuring that citizens discover that there are such things as soil scientists, an excellent alternative to individuals that are currently doing bad soils science under other names.
- Yes, by insuring that those licensed individuals meet professional standards in education and experience, and most important, provide the public with a clear way to complain when they have poor results.
- Yes, correct analyses of soils, correct septic recommendations. This also goes for soil logs for developers looking for infiltration/storm water possibilities for development.

*Is there a reason why applicable laws or existing standards will not solve this problem?*

- No
- Yes, interpretation.
- Yes, they don't require oversight peer review and do not enforce integrity.
- I think the ARCPACS (SSSA) standards would solve a lot of problems if the state would recognize and use them.
- Yes, the problems related to soils are still occurring

- Current laws do not recognize soil scientists as a practicing profession. If the state of Washington would accept the national certification of soil scientists (CPSS through the Soil Science Society of America) and utilize the system for quality and discipline, state licensing might not be necessary.
- Applicable laws being the ones that require uninformed engineers to sign off on the job?
- There are none aside from some that actually require others to do work that is more typically soil science. So in a way, the current laws have created this problem rather than solving it. Maybe new laws related to water quality related to land application of wastes or low impact land development are written to “State licensed individuals” despite that work being acknowledge as being soil science, a profession that is not currently state licensed.
- I don’t know. Not familiar with the laws, but I understand many of the newly written laws are not including soil scientists doing their customary work.
- Possibly, but licensing still gives us more credibility and a professional framework sanctioned by the state.
- National certification under SSSA provides qualification among soil scientists but little among other professions or the private citizen or state/local agencies. It is not a benchmark for the public to judge. State licensing gives the public an avenue for people to examine the person’s qualifications.
- Many jurisdictions in their critical areas ordinance, and other laws require licensed professionals or engineers to perform duties and analyzes that soil scientists are trained to do. So technically, because we are not licensed we cannot perform these services for a client. This affects our livelihood and poses potential risks to consumers.

#### **Attorney General, Chamber of Commerce, Better Business Bureau**

A survey was sent to the states Consumer Protection Division to identify the nature of complaints that are received in regards to the Soil Scientist profession.

The survey requested information on the average number of complaints received in a year, the nature of the complaint received, and whether the complaint was from the public, a corporation, or a government entity.

The following states were sent surveys:

Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kentucky, Maryland, Michigan, Montana, New Jersey, New Mexico, Mississippi, Oklahoma, Oregon, Pennsylvania, Washington, West Virginia, Wyoming

Below are the responding states and a summary of their response:

*New Mexico Attorney General's Office, Consumer Protection Division*

- Responded they were not sure of the meaning of "Soil Scientist". Complaints against businesses under the title of, "Soil Scientist" have not been received.

*Montana Office of Consumer Protection*

- No complaints received regarding Soil Scientists.

*Georgia Governor's Office of Consumer Affairs*

- Complaints for Soil Scientists have not risen to a level to distinguish any complaints on these professions from others in our database.

*Delaware Department of Justice Consumer Protection Unit*

- No complaints received against Soil Scientists

*Mississippi Attorney General's Office, Consumer Protection*

- No complaints received against Soil Scientists

*Office of Indiana Attorney General, Consumer Protection Division*

- The consumer protection division does not have any complaints on file for Soil Scientists.

*Better Business Bureau Serving Alaska, Oregon and Western Washington*

- The Better Business Bureau does not have a classification for Soil Scientists.

## **SITUATIONS IN THE STATE OF WASHINGTON INVOLVING SOIL SCIENTISTS**

### **Model Critical Area Ordinance**

The Department of Community, Trade and Economic Development (CTED) created a model critical area ordinance to help Washington communities when they design locally appropriate programs for designating and protecting critical area. The five critical areas identified in the Growth Management Act include:

- wetlands;
- areas with a critical recharging effect on aquifers used for potable water;
- frequently flooded area; geologically hazardous areas;
- and fish and wildlife habitat conservation areas.

It is unknown how many, but it appears that some communities in Washington are adopting the model critical area ordinance as written by the CTED.

The soil scientist community communicated concerns to CTED regarding critical area requirements within their model ordinance because, as written, it excluded soil scientists as qualified professionals in areas where they were qualified and in one situation where the area is *uniquely* soil science. The critical areas in question were the *Wetland Areas*, and the erosion hazard reports identified within the *Geologic Hazard Area*.

As shown in the current language below, the qualified professional in the wetland section was changed from wetland “biologist” to wetland “scientist”, or other professional trained in wetland science. The change to the model allows soil scientists who are a certified wetland specialist to continue to work in one of their accustomed areas.

*Wetlands and Streams*—“A critical area report for wetlands shall be prepared by a qualified professional who is a certified wetland specialist or a non-certified professional wetland scientist with a minimum of five (5) years experience in the field of wetland science and with experience preparing wetland reports.”

Unfortunately, a request to change the wording in regards to who was qualified to prepare erosion reports was inadvertently left out of the revision. As shown in the language below, the profession is excluded under this model ordinance from work they are qualified to perform.

*Geologically Hazardous Areas*—A critical areas report for a geologically hazardous area shall be prepared by an engineer or geologist, licensed in the state of Washington, with experience analyzing geologic, hydrologic, and ground water flow systems, and who has experience preparing reports for the relevant type of hazard.

For the most part, a geologist or engineer would be the qualified profession for preparing geologically hazardous area reports. However, erosion hazard reports are uniquely soil science. Soil scientists developed the Uniform Soil Loss Equation (USLE) that is used as a standard in these reports. They also developed all of the risk classifications that are used as a basis for these determinations. Natural Resources Conservation Service (NRCS) tables created by soil scientists are the primary source for these risk assessments.

A call to CTED verified that the exclusion of soil scientists as a qualified professional to prepare the erosion hazard reports was an apparent mistake. CTED agreed to provide an addendum to the model ordinance. However, acknowledged an addendum may not necessarily fix the problem in local areas where the ordinance has already been adopted.

### **Situations in Eastern Washington Involving Wastewater Treatment**

There are several cases in Eastern Washington where resources could have been saved, and human health protected if a qualified soil scientist had performed a soil analysis to determine the chemical reaction of land application wastewater. The Department of Ecology has identified 20 circumstances where wastewater was applied by land application which cause anaerobic conditions in the soil that led to the contamination of groundwater and water well. The accounting directly below was provided by the soil scientist involved and verified by a Department of Ecology employee who has been working on the cases identified in the table on the following page:



*Endurance Fruit, Wapato, Washington*—was land application of fruit processing wastewater. The wastewater was not high in iron and sulfur. The wastewater was high in oxygen demanding constituents, mainly fructose. Downgradient individual residential drinking water wells began producing sulfur odors and water turned cloudy with an iron floc. Residents relying on those wells reported increasing incidences of health problems, including infection and internal disorders. Endurance Fruit's engineering consultant, [firm name removed], Yakima, WA had concluded that there was no reasonable connection between Endurance Fruit's activities and the groundwater impacts of concern. On the advice of [DOE employee name removed], [engineering firm name remove] sought out a soil scientist to further investigate the relationship between Endurance Fruit's discharge and the reported groundwater effects. [DOE employee's] primary concern was that the reported sulfur and iron characteristics indicated the likelihood of anaerobic groundwater. [DOE employee] was uniquely aware that anaerobic groundwater has been linked to a higher risk of health effects similar to those reported by downgradient residents.

Investigations performed by [soil scientist], established that wastewater application had induced a pattern of persistent anaerobic soil conditions. Further work established that, in limited areas, anaerobic conditions extended to groundwater. [Soil scientist] went on to advise management improvements to prevent the formation of anaerobic conditions in the future. This work relied on an understanding of soil pe dynamics. Soil pe is the complement to soil pH and is also referred to as redox potential. Groundwater conditions and residential health recovered after sprayfield soil pe conditions improved.

As a result of these investigation, the Department of Ecology included strong recommendations in their guidelines for [Preparation of Engineering Reports for Industrial Wastewater Land Application Systems](#), that the soils report be prepared by a soil scientist or other specialist meeting the definition of a soil scientist.

*Other cases where incorrect analysis of land application of wastewater led to harm*—the table below identifies other cases where the earlier or more competent consultation could have saved resources and protected human health:

<b>Pollution Due To</b>	<b>Location</b>	<b>Affected Party</b>	<b>Settlement</b>	<b>Expertise</b>
Endurance Fruit	Wapato	~ 8 households	Over \$12,000	Engineer first, then soil scientist
Yakima Ind. Sprayfield	Yakima	Yakima River	Closure of sprayfield	Engineers first, then soil scientist
Twin City Foods	Ellensburg	Yakima River	Ongoing	Engineers first, then soil scientist
Tree Top	Selah	Neighbor on dialysis	For dialysis water	Engineer only
Seneca/Tree Top	Prosser	2 or 3 households	Criminal investigation – wastewater treatment and fines	Engineers first, then soil scientist
Port of Sunnyside	Sunnyside	Groundwater	Wastewater treatment	Engineer first, then soil scientist
City of Grandview	Grandview	Groundwater	Wastewater treatment	Engineer first, then soil scientist
Snokist Fruit	Yakima	3 households	Wastewater treatment	Engineer first, then soil scientist
Boise Cascade Lumber	Yakima	Groundwater	Wastewater reduction	Engineer only
Lamb Weston	Richland	Groundwater	Wastewater treatment	Engineer first, then soil scientist
Del Monte Foods, Inc.	Toppenish	Groundwater	Treatment of soil	Engineer first, then soil scientist
Liquid Sugar, Inc.	Toppenish	Groundwater	Trucking of wastewater and treatment of soil	Engineer first, then soil scientist
Sanofi Bio	Harrah	2 households	Closure of facility and nearly \$1,000,000	Engineer attempted defense
Boise Cascade Lumber	Kettle Falls	Groundwater	Wastewater reduction	Engineer only
Pacific Surfacing	Yakima	2 or 3 households	Large financial settlement	No design/accidental
Borton Fruit	Yakima	Houses on lateral “T”	Wastewater trucking and wastewater treatment	Self-engineered
Evans Fruit	Cowiche/ Tieton	2 or 3 households	Wastewater treatment and land application	Engineer only
Town of Dallesport	Dallesport	Columbia River	Wastewater treatment	Soil scientist and engineer
Brown Boys Silage	Kittitas Valley	Sagebrush and Ground Water	Truck wastewater And Line Lagoons	Self-engineered
Pasco Industrial Sprayfield	Pasco	Groundwater	Ongoing	Engineers and Soil scientists

## **Cowlitz County septic system failures**

According to a consultant with the Cowlitz county risk pool, the county has received over 200 claims, with a value of \$3,000,000 to date, as a result of premature septic system failures. The consultant claims that the risk pool is settling hundreds of claims for premature system failures as a result of incompetent soil analysis by a Cowlitz County employee who does not appear to hold any certification as a soil scientist.

## **Camas, WA – Field Inspection Security Incident April 13-14, 1998**

This situation involved Department of Ecology (DOE) and Environmental Protection Agency (EPA), Corps of Engineers and resulted in behavior charged as unprofessional for a Soil Scientist.

An Incident occurred at a land site involving the owner's legal representative and consultants. There was problem with interpretation of wetland delineation as defined by the Corps 1987 Wetland Delineation Manual used as a standard for wetlands.

As a result of the incident a memorandum generated by Department of Ecology, Environmental Resources Section strongly recommending precautions when around this soil scientist because of aggressive behavior. The memorandum also recommended ground rules for data collection and restricting soils scientist work area to a radius of 50 feet around the employee collecting data. The report goes on to say at least two Corps employees attend any field visits when the soil scientist in question is on site. All field visits recommended to be fully documented.

## **Newspaper Articles**

*Daily Olympian*, 11/13/2005, "What is, isn't wetland triggers showdown" by John Dodge  
[jdodge@theolympian.com](mailto:jdodge@theolympian.com)

The issue involves the development of a South Bay property near Henderson Inlet, a South Sound marine area with wetlands, poor water quality and shellfish harvest closure. The property being developed has a drainage ditch which feeds into Meyer Creek and Snug Harbor.

Snug Harbor Homeowners Association appealed the county ruling. The 24-member association wants an independent assessment of the wetlands and field test to be done in a winter when it isn't abnormally dry. The land developer filed a motion with the Thurston County hearing examiner to dismiss the appeal, claiming the parties are not affected by the project.

The major debate surrounds what is and isn't a wetland. In 1929 a Metsker map shows Shincke Road jogging around Frazier Lake at the intersection of 56<sup>th</sup>, which is the site of the property in question being developed.

By 1959 a United States Geological Survey map shows Shincke Road straightened and the lake as a wetland. Thurston County GeoData map show this property as wetlands and/or chronically wet soil. Mapping is a tool for indication the soil could be wet. The property still needs a field test.

The developer, in October 2004 hired Pacific Rim Soil & Water, an Olympia based wetlands consultant to map wetlands on the property and prepare a report. The work was completed but the report never written as the land developer terminated the wetland consultant's contract because, "she had a working relationship with the County that was too close", he said.

The developer then hired Pacific Environmental Consultants, which submitted a wetland report in March 2005 that showed wetland in the southeast corner of the property, but nothing in the northern portion of the site, where previous maps and Pacific Rim Soil & Water identified wetlands.

In July, county officials asked the state Department of Ecology wetland specialist to review the wetland report and visit the site. The report said, "First, it is apparent from our site visit that not all wetland were identified in the report submitted," and further review of the site in light of the dry weather last winter was recommended.

Pulling Ecology into the wetland debate triggered an August 16 letter from the land- owner's attorney to county Deputy Prosecutor blaming county officials for project delays.

The county environmental planner responded by saying, "Had the consultant reviewed the historical data in their own report on the site as well as the wealth of historical information provided by the neighbors and numerous resource and historical maps, they would have recognized that the wetland, and streams, have been there for a significant period of time."

## **CURRENT PRACTICES**

Current laws do not recognize soil scientists as a practicing profession. However, soil scientists settle disputes involving site interpretation and they train others in the profession.

Critical areas ordinances, and other laws require licensed professionals or engineers to perform duties and analyzes. So technically, because soil scientists are not licensed they cannot perform these services for a client, even if educated and trained to do so.

Process for resolving disputes or invoking disciplinary action is an issue. The SSSA has an ethics committee dispute process comprised of professionals from all over the United States. Regional knowledge or investment in local issues is not a priority and the citizen filing complaints find little resolution.

To find a soil scientist a consumer might go to the yellow pages of the telephone directory. However, the yellow pages do not list "soil scientist", creating an access problem for consumers who have soil issues and seek to hire a professional.

If the consumer locates a soil scientist, website access to confirm certification is difficult. If indeed, the consumer has knowledge of SSSA who certify soil scientists and publish a membership list.

## CONCLUSION

Of primary concern is whether or not the public is being harmed by non-regulation of soil scientists. The Sunrise Review was guided by this concern.

*Public harm exists when:*

- The public is unable to find a qualified Soil Scientist listed by title or expertise.
- A Soil Scientist referral list, to determine most qualified professional to perform the work, does not exist.
- Soil Scientist work overlaps with other professionals and make it difficult for the public to know who might best be able to perform a particular soil work.
- Designed septic systems fail for lack of adequate testing by a soil scientist or by others lacking comprehensive education and training in soils.
- Waste, well and groundwater is compromised by decisions truly not in the best interest of public health and safety.

*Soil Scientists are harmed when:*

- Left out of Critical Ordinances as professionals even though educated, trained and experienced to perform the work.
- No list by local jurisdiction provides the public with a means to find them or their specific expertise.
- Soil specialists within related disciplines sometimes choose to refer to themselves as soil scientists, leading to some confusion as to the qualifications.

Current evidence suggests the public as well as soil scientists are being harmed. A considerable amount of evidence exists to show public harm. Evidence includes settlements out of court that show harm, ongoing litigation, public health endangered and compromised by failed well, groundwater, wetlands and septic systems and design work approved without a soil expert to support approval.

## RECOMMENDATION

In view of the findings of the sunrise review in the practice of soil scientist, the following recommendations are made for consideration by the Legislature:

- 1) That Soil Scientists be regulated
- 2) Professional expertise of Soil Scientists be defined to minimize overlap of work to be performed.

## Definitions

**Licensure:** “license”, “licensing”, and “Licensure” mean permission to engage in a business profession that would otherwise be unlawful in the state in the absence of the permission. A license is granted to those who meet prerequisite qualifications to perform prescribed professional tasks and for the use of a particular title.

**Certification:** “Certificate” and “Certification” mean a voluntary process by which a statutory regulatory entity grants recognition to an individual who has 1) met certain prerequisite qualifications specified by that regulatory entity, and 2) may assume to use “certified” in the title or designation to perform prescribed professional tasks.

**Registration:** “Registration” means the formal notification that, prior to rendering services, a practitioner shall submit to a state agency setting forth the name and address of the practitioner; the location, nature, and operation of the business activity to be practiced; and, if required by the regulatory entity, a description of the service to be provided.

STATE REPRESENTATIVE  
29th DISTRICT  
STEVE CONWAY

State of  
Washington  
House of  
Representatives

COMMERCE & LABOR  
CHAIR  
FINANCE  
HEALTH CARE



RECEIVED  
JAN 11 2006  
CLERK OF HOUSE

Liz Luce  
Director, Department of Licensing  
P.O. Box 9020  
Olympia, Washington 98507-9020

Dear Director Luce:

Please consider this request on behalf of the House Commerce & Labor Committee to conduct a sunrise review pursuant to chapter 18.118 RCW of following two professions recently proposed for regulation in bills pending before the Legislature:

House Bill 1811, establishing licensing requirements for soil scientists.

Substitute House Bill 1878, establishing a system of registration for interior designers.

As provided in RCW 18.118.030, the sunrise review should include an evaluation of information provided by a wide range of interested parties. It is extremely important that notice of this review and the opportunity for providing information be widely disseminated among the appropriate stakeholders.

The sunrise review should also include the Department's analysis and recommendations regarding value of regulation to protect the public interest, using the factors stated in RCW 18.118.010(2).

It is my hope that your written report on these two sunrise reviews would be available to the Legislature by the start of the Legislative Session in January 2006.

Thank you for your attention to this matter.

Sincerely,

A handwritten signature in cursive script, appearing to read "Steve Conway".

Steve Conway  
State Representative  
Chair, House Commerce & Labor Committee

cc: Sharon Whitehead  
Andrea Archer  
Alan Haight